

WHAT IS CLAIMED IS:

1. An imaging apparatus comprising:

an imaging unit which generates, by capturing an image of a subject, an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions;

an enlarging unit which generates an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels by performing enlargement processing on the image signal generated by said imaging means; and

a reducing unit which generates a reduced image signal corresponding to a reduced image having a predetermined number of M pixels by N pixels by performing reduction processing on the enlarged image signal corresponding to the enlarged image having the number of P pixels by Q pixels.

2. An imaging apparatus according to Claim 1, wherein said enlarging means sets a magnification used in the enlargement processing on the image signal generated by said imaging means in accordance with the number of H pixels by W pixels.

3. An imaging apparatus according to Claim 1, wherein

said reducing means generates said reduced image signal corresponding to the reduced image having the number of M pixels by N pixels by performing the reduction processing on the enlarged image signal by using a fixed factor.

4. An imaging apparatus according to Claim 1, wherein said enlarging means performs the enlargement processing by using linear interpolation.

5. An imaging apparatus according to Claim 1, wherein said enlarging means performs the enlargement processing by using cubic convolutional interpolation.

6. An imaging apparatus according to Claim 1, wherein said imaging means includes an imaging device having the number of P pixels by Q pixels, and generates the image signal corresponding to the image having the number of H pixels by W pixels by using part of an area of said imaging device.

7. An imaging apparatus according to Claim 1, further comprising recording means for recording the reduced image signal generated by said reducing means on a recording medium.

9. An imaging apparatus according to Claim 8, wherein said imaging apparatus has a first image-capture mode and a second image-capture mode, and in accordance with a set image-capture mode among said first image-capture mode and said second image-capture mode, one of the reduced image signal corresponding to the number of M pixels by N pixels and the enlarged image signal corresponding to the number of P pixels by Q pixels is selected.

10. An imaging apparatus according to Claim 9, further comprising display means for displaying an image based on the reduced image signal corresponding to the number of M pixels by N pixels irrespective of a set image-capture mode.

11. An imaging apparatus according to Claim 1, further comprising:

first recording means for recording, as a moving picture signal, the reduced image signal corresponding to

the number of M pixels by N pixels on a first recording medium; and

second recording means for recording, as a still picture signal, the enlarged image signal corresponding to the number of P pixels by Q pixels on a second recording medium.

12. An imaging apparatus according to Claim 1, further comprising display means for displaying an image based on the reduced image signal corresponding to the number of M pixels by N pixels.

13. An imaging apparatus according to Claim 1, further comprising display means for selectively displaying one of an image based on the reduced image signal corresponding to the number of M pixels by N pixels and an image based on the enlarged image signal corresponding to the number of P pixels by Q pixels.

14. An imaging apparatus comprising:

imaging means for generating an image signal corresponding to an arbitrary size equal to or smaller than a first predetermined size, the generated image signal being converted into an image signal corresponding to a second predetermined size by said imaging apparatus;

enlarging means for performing enlargement processing on said image signal generated by said imaging means so that an image signal corresponding to said first predetermined size is generated; and

reducing means for performing reduction processing on said image signal generated by said enlarging means so that an image signal corresponding to said second predetermined size is generated.

15. An imaging apparatus according to Claim 14, wherein:

said enlarging means performs the enlargement processing on said image signal generated by said imaging means by using a magnification in accordance with the arbitrary size on said image signal generated by said imaging means; and

said reducing means performs the reduction processing on said image signal generated by said enlarging means by using a fixed factor.

16. An imaging apparatus comprising:

imaging means having an electronic zoom function;

enlarging means for performing enlargement processing on an image signal generated by said imaging means by using a variable magnification in accordance with a magnification

used in said electronic zoom function; and

reducing means for performing reduction processing on the image signal processed by said enlarging means by using a fixed factor

17. An imaging apparatus according to Claim 16, wherein:

said enlarging means generates an image signal corresponding to a first predetermined size by performing enlargement processing on said image signal generated by said imaging means; and

said reducing means generates an image signal corresponding to a second predetermined size by performing reduction processing on the generated image signal corresponding to said first predetermined size.

18. An imaging apparatus comprising:

imaging means for generating, by capturing an image of a subject, an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions;

enlarging means for generating an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels by performing enlargement processing on

the image signal generated by said imaging means;

reducing means for generating a reduced image signal corresponding to a reduced image having a predetermined number of M pixels by N pixels by performing reduction processing on the enlarged image signal corresponding to the enlarged image having the number of P pixels by Q pixels;

mode-setting means for selectively setting one of a moving picture recording mode in which the reduced image signal is recorded as a moving picture on a first recording medium and a still picture recording mode in which a portion of the enlarged image signal which corresponds to one frame is recorded as a still picture on a second recording medium; and

display means for displaying an image corresponding to the reduced image signal from said reducing means irrespective of one of the modes which is set by said mode-setting means.

19. An imaging apparatus comprising:

imaging means for generating, by capturing an image of a subject, an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions;

enlarging means for generating an enlarged image signal

corresponding to an enlarged image having the number of P pixels by Q pixels by performing cubic convolutional interpolation processing on the image signal generated by said imaging means; and

reducing means for generating a reduced image signal corresponding to a reduced image having a predetermined number of M pixels by N pixels by performing finite-impulse-response filtering on the enlarged image signal corresponding to the enlarged image having the number of P pixels by Q pixels.

20. An imaging apparatus comprising:

imaging means for generating, by capturing an image of a subject, an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions;

enlarging means for generating an enlarged image signal by performing linear-interpolation processing on the image signal generated by said imaging means; and

reducing means for generating a reduced image signal corresponding to a reduced image having a predetermined number of M pixels by N pixels by performing finite-impulse-response filtering on the enlarged image signal corresponding to the enlarged image having the number of P

pixels by Q pixels.

21. An image processing apparatus comprising:

input means for inputting an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions;

enlarging means for generating an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels by performing enlargement processing on the image signal generated by said imaging means; and

reducing means for generating a reduced image signal corresponding to a reduced image having a predetermined number of M pixels by N pixels by performing reduction processing on the enlarged image signal corresponding to the enlarged image having the number of P pixels by Q pixels.

22. An image processing apparatus according to Claim 21, wherein said enlarging means performs the enlargement processing by using linear interpolation.

23. An image processing apparatus according to Claim 21, wherein said enlarging means performs the enlargement processing by using cubic convolutional interpolation.

24. An image processing apparatus according to Claim 21, wherein said reducing means performs the reduction processing by using finite-impulse-response filtering.

25. An image processing apparatus comprising:
input means for inputting an interlaced image signal corresponding to an interlaced image including an arbitrary number of H pixels which is less than a predetermined number of P pixels in the vertical direction of one field;
enlarging means for generating a progressive image signal corresponding to a progressive image including the number of P pixels in the vertical direction by performing enlargement processing on the input interlaced image signal in units of fields; and
reducing means for generating an interlaced image including a predetermined number of M pixels in the vertical direction by performing reduction processing on the progressive image signal in units of frames.

26. An image processing apparatus for outputting an image signal corresponding to an image having a predetermined number of M pixels by N pixels by performing reduction processing on an image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is less than a predetermined number of P pixels by Q

pixels in vertical and horizontal directions, said image processing apparatus comprising:

input means for inputting the image signal corresponding to the image having the number of H pixels by W pixels;

first enlarging means for generating an image signal corresponding to an image having a predetermined number of H pixels by Q pixels by performing horizontal enlargement processing on the input image signal;

first reducing means for generating an image signal corresponding to an image having a predetermined number of H pixels by N pixels by performing horizontal reduction processing on the generated image signal corresponding to the image having the number of H pixels by Q pixels;

second enlarging means for generating an image signal having a predetermined number of P pixels by N pixels by performing vertical enlargement processing on the generated image signal corresponding to the image having the number of H pixels by N pixels; and

second reducing means for generating an image signal corresponding to an image having the number of M pixels by N pixels by performing vertical reduction processing on the obtained image signal corresponding to the image having the number of P pixels by N pixels.

27. A method for generating an image signal corresponding to an image having a predetermined number of M pixels by N pixels by converting an input image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is less than a predetermined number of P pixels by Q pixels in vertical and horizontal directions, said method comprising the steps of:

generating an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels by performing enlargement processing on the input image signal; and

generating the image signal corresponding to the image having the number of M pixels by N pixels by performing reduction processing on the generated enlarged image signal corresponding to the image having the number of P pixels by Q pixels.

28. A method for generating an image signal corresponding to an image having a predetermined number of M pixels by N pixels by converting an input image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is less than a predetermined number of P pixels by Q pixels in vertical and horizontal directions, said method comprising:

a first enlarging step for generating an image signal

corresponding to an image having a number of H pixels by Q pixels by performing horizontal enlargement processing on the input image signal;

a first reducing step for generating an image signal corresponding to an image having a number of H pixels by N pixels by performing horizontal reduction processing on the generated image signal corresponding to the image having the number of H pixels by Q pixels;

a second enlarging step for generating an image signal corresponding to an image having a number of P pixels by N pixels by performing vertical enlargement processing on the generated image signal corresponding to the image having the number of H pixels by N pixels; and

a second reducing step for generating an image signal corresponding to an image having a number of M pixels by N pixels by performing vertical reduction processing on the generated image signal corresponding to the image having the number of P pixels by N pixels.

29. A method for converting an input image signal from an imaging device which corresponds to an arbitrary image size equal to or less than a first predetermined image size into an image signal corresponding to a second image size, said method comprising the steps of:

generating an enlarged image signal corresponding to an

enlarged image having said first predetermined image size by performing enlargement processing on said input image signal corresponding to the arbitrary image size; and

performing reduction processing on the generated image signal so that the image signal corresponding to said second image size is generated.

30. A method for generating an interlaced image signal corresponding to an interlaced image having a predetermined number of M pixels in the vertical direction by converting an input interlaced image signal corresponding to an interlaced image having an arbitrary number of H pixels which is not greater than a predetermined number of P pixels in the vertical direction of one field, said method comprising:

an enlarging step for generating a progressive image signal corresponding to a progressive image having the number of P pixels in the vertical direction by performing enlargement processing on said input interlaced image signal in units of fields; and

a reducing step for generating an interlaced image signal corresponding to an interlaced image having the number of M pixels by performing reduction processing on the generated progressive image signal in units of frames.

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31. A storage medium storing a program for controlling a computer to execute a process for generating an image signal corresponding to an image having a predetermined number of M pixels by N pixels by converting an input image signal corresponding to an image having a predetermined number of H pixels by W pixels which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions, said process comprising the steps of:

generating an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels by performing enlargement processing on said input image signal; and

generating said image signal corresponding to the image having the number of M pixels by N pixels by performing reduction processing on the generated enlarged image signal corresponding to the image having the number of P pixels by Q pixels.

32. A storage medium storing a program for controlling a computer to execute a process for generating an image signal corresponding to an image having a predetermined number of M pixels by N pixels by converting an input image signal corresponding to an image having an arbitrary number of H pixels by W pixels which is less than a predetermined number of P pixels by Q pixels in vertical and horizontal

a first enlarging step for generating an image signal corresponding to an image having a number of H pixels by Q pixels by performing horizontal enlargement processing on the input image signal;

a second enlarging step for generating an image signal corresponding to an image having a number of P pixels by N pixels by performing vertical enlargement processing on the generated image signal corresponding to the image having the number of H pixels by N pixels; and

33. A storage medium storing a program for controlling a computer to execute a process for converting an input image signal from an imaging device which corresponds to an arbitrary image size equal to or less than a first

predetermined image size into an image signal corresponding to a second image size, said process comprising the steps of:

generating an enlarged image signal corresponding to an enlarged image having said first predetermined image size by performing enlargement processing on said input image signal corresponding to the arbitrary image size; and

performing reduction processing on the generated image signal so that the image signal corresponding to said second image size is generated.

34. A storage medium storing a program for controlling a computer to execute a process for generating an interlaced image signal corresponding to an interlaced image having a predetermined number of M pixels in the vertical direction by converting an input interlaced image signal corresponding to an interlaced image having an arbitrary number of H pixels which is not greater than a predetermined number of P pixels in the vertical direction of one field, said process comprising:

an enlarging step for generating a progressive image signal corresponding to a progressive image having the number of P pixels in the vertical direction by performing enlargement processing on said input interlaced image signal in units of fields; and

a reducing step for generating an interlaced image signal corresponding to an interlaced image having the number of M pixels by performing reduction processing on the generated progressive image signal in units of frames.

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